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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/608,108

06/30/2003

Hirotake Ando

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EXAMINER

PHAM, VAN T

ART UNIT

PAPER NUMBER

2627

DATE MAILED: 11/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/608,108		ANDO, HIROTAKE	
	<b>Examiner</b>		<b>Art Unit</b>	
	VAN T. PHAM		2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8, 11-16, 18 and 21 is/are rejected.
- 7) ☒ Claim(s) 7, 9, 10, 17, 19 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

*Response to Arguments*

1. Applicant's arguments filed 10/25/2006 have been fully considered but they are not persuasive.

Applicant's asserted "In contrast, the patent to Yoshimoto et al. is understood to relate to the problem of stabilizing tracking servo control, which is difficult to control because the tracking offset or the amplitude of the tracking error signal varies in accordance with the radial direction of a disk. To solve this problem, this patent is understood to propose that a region of the disk is divided into a plurality of regions in a radial direction, and the offset or a sensor gain is adjusted properly in each region. (See the col. 13, line 65 - col. 14, line 10.). In other words, the sensor gain is understood to be adjusted to suppress the fluctuation of the amplitude of the tracking error signal among different regions of the disk, i.e., the adjustment is understood to suppress a fluctuation of the servo-loop gain in any region of the disk. In addition, this patent is understood to be silent on the rotation control of the disk. Therefore, this patent is not understood to relate to an optical information reproducing apparatus for recording or reproducing information by controlling rotation of an optical disk so as to provide a constant linear velocity by changing a rotation frequency in accordance with a radial-direction position of an optical spot, comprising a circuit configured to control rotation of the optical disk, and a circuit configured to adjust a servo-loop gain of tracking servo control in accordance with the change of the rotation frequency, as recited by Claim 1. And, this patent is also not understood to relate to an optical information reproducing apparatus for recording or reproducing information using an optical spot by controlling rotation of an optical disk so as to provide a constant linear velocity by changing a rotation frequency in accordance with a radial-direction position of the optical spot,

comprising a circuit configured to control rotation of the optical disk, and a circuit configured to adjust a servo-loop gain of focus servo control in accordance with the change of the rotation frequency, as recited by Claim 11.”, which is true. Yoshimoto is silent on the rotation control of the disk but he disclose in FIG. 9 the optical disk drive includes means for rotating an optical disk medium, an optical head for directing a light beam reflected from the optical disk with a linear motor 46 provides coarse movement in the radial direction on a constant speed; and also the tracking signal varies in frequency during seeking in accordance with the optical head velocity. Therefore, this limitation is inherently.

**Noted:** the set of the claims submitted on May 02-2006, which indicated all the claims are “Original”. But there is founded that from claim 11-21 are not the same to the original claims submitted on 06/30/2003. Therefore, this Final is based on the original claims, which had rejected before and replaced “radial-direction position of the optical spot” with “change of the rotation frequency”.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 8, 11-14, 18 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshimoto et al (US 5,251,194).

Regarding claim 1, Yoshimoto discloses an optical information reproducing apparatus for recording or reproducing information on/from an optical disk using an optical spot, and which controls rotation of the optical disk so as to provide a constant linear velocity by changing a rotation frequency in accordance with a radial-direction position of the optical spot, said apparatus comprising: a rotation control circuit that controls rotation of the optical disk (see Figs. 1, 18, elements 46, 72 and col. 6); a focus servo control circuit and a tracking servo control circuit for the optical spot (see Figs. 1, 18 and col. 3) and tracking control circuit that adjusts a servo-loop gain for tracking servo control in accordance with the change of the rotation frequency (see Figs. 1, 18 and cols. 3-4, 9, abstract).

Regarding claim 2, see Figs. 1, 18 and col. 9, discloses an apparatus according to claim 1, wherein said tracking control circuit adjusts the servo-loop gain in accordance with a steady state rotation frequency at the radial-direction position of the optical spot (inherently).

Regarding claim 3, see Figs. 1, 18 and col. 9, discloses an apparatus according to claim 1, wherein a recording region of the optical disk is divided into a plurality of zones in a radial direction (see abstract), said rotation control circuit controls rotation of the optical disk so that a linear velocity is substantially constant between respective zones by changing the rotation frequency for each zone, and said tracking control circuit adjusts the servo-loop gain in accordance with a steady state rotation frequency for each zone.

Regarding claim 11, see Figs. 1, 18 and col. 9, discloses an apparatus according to claim 1, wherein said tracking control circuit adjusts the servo-loop gain in accordance with a transient change of the rotation frequency caused by movement of the optical spot in a radial direction (inherently).

4. Claim 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto et al. (US 6,606,284).

Regarding claim 12, see rejection above of claim 1 and Yoshimoto discloses an optical information reproducing apparatus for recording or reproducing information on/from an optical disk using an optical spot, and which controls rotation of the optical disk so as to provide a constant linear velocity by changing a rotation frequency in accordance with a radial-direction position of the optical spot, said apparatus comprising: a rotation control circuit that controls rotation of the optical disk; a focus servo control circuit and a tracking servo control circuit for the optical spot; and a focus control circuit that adjusts a servo-loop gain for focus servo control in accordance with the change of the rotation frequency (see Figs. 1, 18, abstract and cols. 3-4, 6).

Regarding claim 13, see rejection above of claim 2.

Regarding claim 14, see rejection above of claim 3.

Regarding claims 8 and 18, see rejection above of claim 3.

Regarding claim 21 see rejection above of claim 11.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4-6 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshimoto et al. (US 5,251, 194) in view of the admitted art.

Regarding claim 4, Yoshimoto discloses an apparatus according to claim 1, and discloses a tracking control circuit adjusts the servo-loop gain. However, Yoshimoto does not disclose a tracking control circuit adjusts the servo-loop gain by setting a gain proportional to an eccentric acceleration corresponding to the change of the rotation frequency.

The admitted art discloses an apparatus according to claim 1, wherein said tracking control circuit adjusts the servo-loop gain by setting a gain proportional to an eccentric acceleration corresponding to the radial-direction position of the optical spot (see [0011]-[0012] and Figs. 7-8).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a gain proportional to an eccentric acceleration corresponding to the radial-direction of the optical spot in Yoshimoto as suggested by the admitted art, the motivation being in order to have the rotation frequency is highest at the outer circumference in a radial direction and decreases toward the outer circumference (see the admitted art [0010]).

Regarding claim 5, Yoshimoto discloses an apparatus according to claim 1, a tracking servo control circuit (see Figs. 1, 18) that adjust a servo-loop gain for tracking servo control in accordance with the change of the rotation frequency. However, Yoshimoto does not disclose a tracking servo control is controlled by a sampling frequency that changes in accordance with the change of the rotation frequency, and wherein said tracking control circuit performs gain adjustment in accordance with the radial-direction position of the optical spot in a state in which a coefficient of a phase compensation filter included in said tracking servo control circuit is fixed. However, Yoshimoto does discloses a tracking servo control changes in accordance with

the radial-direction position of the optical spot, and wherein said tracking control circuit performs gain adjustment in accordance with the radial-direction position of the optical.

The admitted art, see Figs. 6(11)-8, discloses an apparatus which has a tracking servo control circuit is controlled by a sampling frequency, and wherein said tracking control circuit performs gain adjustment in a state in which a coefficient of a phase compensation filter included in said tracking servo control circuit is fixed (see [0011]).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a tracking servo control circuit is controlled by a sampling frequency, and wherein said tracking control circuit performs gain adjustment in a state in which a coefficient of a phase compensation filter included in said tracking servo control circuit is fixed in Yoshimoto as suggested by the admitted art, the motivation being in order to be able to perform control within a control error range desired for recording and reproducing (see the admitted art [0011]).

Regarding claim 6, Yoshimoto discloses an apparatus according to claim 1, a tracking servo control circuit (see Figs. 1, 18 and col. 3-4) that adjust a servo-loop gain for tracking servo control in accordance with the change of the rotation frequency (see col. 4, lines 34-56, see response). However, Sakamoto does not disclose a tracking servo control is a sample servo disk having a servo region provided radially from the center of the optical disk, and wherein said tracking control circuit performs gain adjustment in a state in which a coefficient of a phase compensation filter included in said tracking servo control circuit is fixed. However, Yoshimoto does disclose the optical disk is a servo disk having a servo region provided radially from the

center of the optical disk, and wherein said tracking control circuit performs gain adjustment in accordance with the radial-direction position of the optical spot (see Figs. 4-8).

The admitted art discloses an apparatus which has the optical disk is a sample servo disk having a servo region provided radially from the center of the optical disk (see the admitted art [0019 and Figs. 7-8), and wherein said tracking control circuit performs gain adjustment in accordance with the radial-direction position of the optical spot in a state in which a coefficient of a phase compensation filter included in said tracking servo control circuit is fixed (see the admitted art [0019] and Fig. 6, element 11).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide tracking control circuit is a sample servo disk having a servo region provided radially from the center of the optical disk and performs gain adjustment in a state in which a coefficient of a phase compensation filter included in said tracking servo control circuit is fixed in Yoshimoto as suggested by the admitted art, the motivation being in order to be able to perform control within a control error range desired for recording and reproducing (see the admitted art [0011]).

Regarding claim 15, see rejection above of claim 4.

Regarding claim 16, see rejection above of claim 5.

***Allowable Subject Matter***

7. Claims 7, 9-10, 17 and 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7, 17 are allowable over prior art of record since it does not disclose or suggest all of the limitations of claims 7 or 17 as well as the limitation that **tracking servo control circuit is controlled with a constant sampling period in the entire region of the optical disk, and wherein said tracking control circuit adjusts the servo-loop gain by adjusting a coefficient of a phase compensation filter included in said tracking servo control circuit and a gain in accordance with the change of the rotation frequency.**

Claims 9, 19 are allowable over prior art of record since it does not disclose or suggest all of the limitations of claims 9 or 19 as well as the limitation that **tracking control circuit adjusts the servo-loop gain so that when a servo gain at a highest rotation frequency  $W_{max}$  is represented by  $G_{max}$ , and a rotation frequency is represented by  $W_{curr}$ , a servo gain  $G_{curr}$  satisfies the following relationship:  $G_{curr} \approx G_{max} \cdot W_{curr} / W_{max}$ .**

Claims 10, 20 are allowable over prior art of record since it does not disclose or suggest all of the limitations of claims 10 or 20 as well as the limitation that **focus servo control circuit comprises a circuit that adjusts a servo-loop gain for focus servo control, and wherein, when said tracking control circuit changes the servo-loop gain for tracking servo control with a predetermined ratio, said focus control circuit changes the servo-loop gain for focusing servo control with a ratio proportional to the square root of the predetermined ratio.**

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

*Cited References*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The cited references relate to


- a. Gain controlling apparatus (Sakamoto et al. US 6,606,284).
- b. Apparatus for controlling bias amount of focus error signal (Bradshaw et al. US 5,751,674).
- c. Optical disk apparatus capable of correcting tracking error (Shimada US 6,894,957).
- d. Servo control apparatus for controlling position of device (Naohara US 5,896,353).
- e. Techniques for controlling beam position and focus in optical disk drives (Yoshimoto et al. US 5,251, 194).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to VAN T. PHAM whose telephone number is 571-272-7590. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VP

  
THANG V. TRAN  
PRIMARY EXAMINER